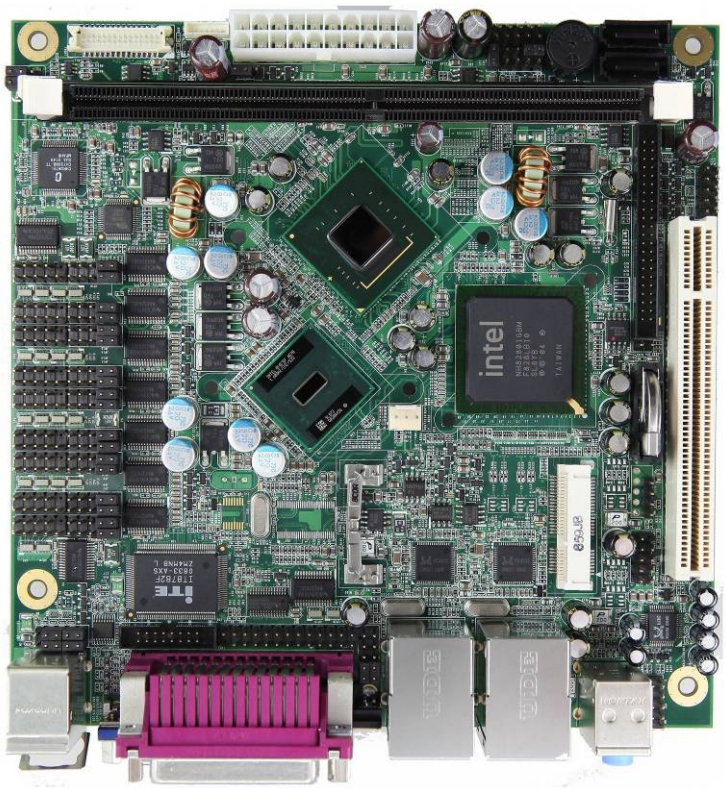
KEMX-2130

Industrial Motherboard in Mini-ITX form factor with Intel® Atom N270

User's Guide



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Quanmax reserves the right to make changes without notice in product or component design as warranted by evolution in user needs or progress in engineering or manufacturing technology. Changes which affect the operation of the unit will be documented in the next revision of this user's guide.

Revision	Date	Edited by	Changes
1.0	06/19/2009	SLee	Initial Release
1.01	06/29/2009	SLee	Add LED Status
1.02	7/27/2009	SLee	Add COM1 RS422/485 pin out

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Safety Instructions

■ Before You Begin

Before handling the product, read the instructions and safety guidelines on the following pages to prevent damage to the product and to ensure your own personal safety. Refer to the “Advisories” section in the Preface for advisory conventions used in this user’s guide, including the distinction between Warnings, Cautions, Important Notes, and Notes.

- Always use caution when handling/operating a computer. Only qualified, experienced, authorized electronics service personnel should access the interior of a computer. The power supplies produce high voltages and energy hazards, which can cause bodily harm.
- Use extreme caution when installing or removing components. Refer to the installation instructions in this user’s guide for precautions and procedures. If you have any questions, please contact Quanmax Post-Sales Technical Support.

WARNING

High voltages are present inside the chassis when the unit’s power cord is plugged into an electrical outlet. Turn off system power, turn off the power supply, and then disconnect the power cord from its source before removing the chassis cover. Turning off the system power switch does not remove power to components.

■ When Working Inside a Computer

Before taking covers off a computer, perform the following steps:

1. Turn off the computer and any peripherals.
2. Disconnect the computer and peripherals from their power sources or subsystems to prevent electric shock or system board damage. This does not apply when hot swapping parts.
3. Follow the guidelines provided in “Preventing Electrostatic Discharge” on the following page.
4. Disconnect any telephone or telecommunications lines from the computer.

In addition, take note of these safety guidelines when appropriate:

- To help avoid possible damage to system boards, wait five seconds after turning off the computer before removing a component, removing a system board, or disconnecting a peripheral device from the computer.
- When you disconnect a cable, pull on its connector or on its strain-relief loop, not on the cable itself. Some cables have a connector with locking tabs. If you are disconnecting this type of cable, press in on the locking tabs before disconnecting the cable. As you pull connectors apart, keep them evenly aligned to avoid bending any connector pins. Also, before connecting a cable, make sure both connectors are correctly oriented and aligned.

CAUTION

Do not attempt to service the system yourself except as explained in this user's guide. Follow installation and troubleshooting instructions closely.

■ Preventing Electrostatic Discharge

Static electricity can harm system boards. Perform service at an ESD workstation and follow proper ESD procedure to reduce the risk of damage to components. Quanmax strongly encourages you to follow proper ESD procedure, which can include wrist straps and smocks, when servicing equipment.
You can also take the following steps to prevent damage from electrostatic discharge (ESD):

- When unpacking a static-sensitive component from its shipping carton, do not remove the component's antistatic packing material until you are ready to install the component in a computer. Just before unwrapping the antistatic packaging, be sure you are at an ESD workstation or grounded. This will discharge any static electricity that may have built up in your body.
- When transporting a sensitive component, first place it in an antistatic container or packaging.
- Handle all sensitive components at an ESD workstation. If possible, use antistatic floor pads and workbench pads.
- Handle components and boards with care. Don't touch the components or contacts on a board. Hold a board by its edges or by its metal mounting bracket.
- Do not handle or store system boards near strong electrostatic, electromagnetic, magnetic, or radioactive fields.

Preface

■ How to Use This Guide

This guide is designed to be used as step-by-step instructions for installation, and as a reference for operation, troubleshooting, and upgrades.

NOTE

Driver downloads and additional information are available under Downloads on our web site: www.quanmax.com.

■ Unpacking

When unpacking, follow these steps:

1. After opening the box, save it and the packing material for possible future shipment.
2. Remove all items from the box. If any items listed on the purchase order are missing, notify Quanmax customer service immediately.
3. Inspect the product for damage. If there is damage, notify Quanmax customer service immediately. Refer to “Warranty Policy” for the return procedure.

■ Regulatory Compliance Statements

This section provides the FCC compliance statement for Class A devices.

FCC Compliance Statement for Class A Devices

The product(s) described in this user’s guide has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the user’s guide, may cause harmful interference to radio communications. Operation of this equipment in a residential area (domestic environment) is likely to cause harmful interference, in which case

the user will be required to correct the interference (take adequate measures) at their own expense.
Changes or modifications not expressly approved by Quanmax could void the user's authority to operate the equipment.

NOTE

The assembler of a personal computer system may be required to test the system and/or make necessary modifications if a system is found to cause harmful interference or to be noncompliant with the appropriate standards for its intended use.

■ Warranty Policy

Limited Warranty

Quanmax Inc.'s detailed Limited Warranty policy can be found under Support at www.quanmax.com. Please consult your distributor for warranty verification.
The limited warranty is void if the product has been subjected to alteration, neglect, misuse, or abuse; if any repairs have been attempted by anyone other than Quanmax or its authorized agent; or if the failure is caused by accident, acts of God, or other causes beyond the control of Quanmax or the manufacturer. Neglect, misuse, and abuse shall include any installation, operation, or maintenance of the product other than in accordance with the user's guide.
No agent, dealer, distributor, service company, or other party is authorized to change, modify, or extend the terms of this Limited Warranty in any manner whatsoever.
Quanmax reserves the right to make changes or improvements in any product without incurring any obligation to similarly alter products previously purchased.

Return Procedure

For any Limited Warranty return, please contact Support at www.quanmax.com and login to obtain a Return Material Authorization (RMA) Number. If you do not have an account, send an email to support@quanmax.com to apply for one.
All product(s) returned to Quanmax for service or credit must be accompanied by a Return Material Authorization (RMA) Number. Freight on all returned items must be prepaid by the customer who is responsible for any loss or damage caused by common carrier in transit. Returns for Warranty must include a Failure Report for each unit, by serial number(s), as well as a copy of the original invoice showing the date of purchase.
To reduce risk of damage, returns of product must be in a Quanmax shipping

container. If the original container has been lost or damaged, new shipping containers may be obtained from Quanmax Customer Service at a nominal cost. Quanmax owns all parts removed from repaired products. Quanmax uses new and reconditioned parts made by various manufacturers in performing warranty repairs and building replacement products. If Quanmax repairs or replaces a product, its warranty term is not extended.
Shipments not in compliance with this Limited Warranty Return Policy will not be accepted by Quanmax.

Limitation of Liability

In no event shall Quanmax be liable for any defect in hardware, software, loss, or inadequacy of data of any kind, or for any direct, indirect, incidental, or consequential damages in connection with or arising out of the performance or use of any product furnished hereunder. Quanmax's liability shall in no event exceed the purchase price of the product purchased hereunder. The foregoing limitation of liability shall be equally applicable to any service provided by Quanmax or its authorized agent.

■ Maintaining Your Computer

Environmental Factors

- **Temperature**

  The ambient temperature within an enclosure may be greater than room ambient temperature. Installation in an enclosure should be such that the amount of air flow required for safe operation is not compromised. Consideration should be given to the maximum rated ambient temperature. Overheating can cause a variety of problems, including premature aging and failure of chips or mechanical failure of devices.
  If the system has been exposed to abnormally cold temperatures, allow a two-hour warm-up period to bring it up to normal operating temperature before turning it on. Failure to do so may cause damage to internal components, particularly the hard disk drive.

- **Humidity**

  High-humidity can cause moisture to enter and accumulate in the system. This moisture can cause corrosion of internal components and degrade such properties as electrical resistance and thermal conductivity. Extreme moisture buildup inside the system can result in electrical shorts, which can cause

serious damage to the system.

Buildings in which climate is controlled usually maintain an acceptable level of humidity for system equipment. However, if a system is located in an unusually humid location, a dehumidifier can be used to maintain the humidity within an acceptable range. Refer to the “Specifications” section of this user’s guide for the operating and storage humidity specifications.

- **Altitude**

  Operating a system at a high altitude (low pressure) reduces the efficiency of the cooling fans to cool the system. This can cause electrical problems related to arcing and corona effects. This condition can also cause sealed components with internal pressure, such as electrolytic capacitors, to fail or perform at reduced efficiency.

Power Protection

The greatest threats to a system’s supply of power are power loss, power spikes, and power surges caused by electrical storms, which interrupt system operation and/or damage system components. To protect your system, always properly ground power cables and one of the following devices.

- **Surge Protector**

  Surge protectors are available in a variety of types and usually provide a level of protection proportional with the cost of the device. Surge protectors prevent voltage spikes from entering a system through the AC power cord. Surge protectors, however, do not offer protection against brownouts, which occur when the voltage drops more than 20 percent below the normal AC line voltage level.

- **Line Conditioner**

  Line conditioners go beyond the over voltage protection of surge protectors. Line conditioners keep a system’s AC power source voltage at a fairly constant level and, therefore, can handle brownouts. Because of this added protection, line conditioners cost more than surge protectors. However, line conditioners cannot protect against a complete loss of power.

- **Uninterruptible Power Supply**

  Uninterruptible power supply (UPS) systems offer the most complete protection against variations on power because they use battery power to keep the server

running when AC power is lost. The battery is charged by the AC power while it is available, so when AC power is lost, the battery can provide power to the system for a limited amount of time, depending on the UPS system.
UPS systems range in price from a few hundred dollars to several thousand dollars, with the more expensive unit s allowing you to run larger systems for a longer period of time when AC power is lost. UPS systems that provide only 5 minutes of battery power let you conduct an orderly shutdown of the system, but are not intended to provide continued operation. Surge protectors should be used with all UPS systems, and the UPS system should be Underwriters Laboratories (UL) safety approved.

Chapter 1

Introduction

■ Overview

The KEMX-2130 is a Mini-ITX form factor industrial motherboard combining the latest Intel 45nm Intel® Atom™ processor with the high integration of the Intel® 945GSE/ ICH7-M chipset. The new architecture of Atom™ N270 enable the lowest power consumption and smallest form factor for thin client and fundamental use. Featured are DDR2-400/533 DIMM up to 2GB, 18/ 24-bit LVDS, 2x Gigabit Ethernet, SATA, PCI/mini PCIe Expansion slot, 8x USB 2.0, 10x COM ports with Power Selection, HD audio, parallel port and keyboard/mouse.
The KEMX-2130 is a compact, high performance industrial motherboard that is ideal for multimedia, gaming, mobile PC, and thin client applications.

Checklist

- Driver/ Manual CD
- I/O Shield
- KEMX-2130 Mini-ITX Embedded Board
- SATA cable (7-pin connector, L=46cm)
- Quick Installation Guide

Features

- Intel® Atom™ Processor N270
- Intel® 945GSE / ICH7-M
- 1x VGA,18/24-bit dual-channel LVDS
- 1x DDR2 DIMM Socket, total up to 2 GB
- Mini PCIe slot, PCI expansion slot
- 2x SATA, 8x USB 2.0, 2x GbE
- 10x COM ports, 1x Parallel port, 4x DI/DO
- Watchdog Timer, Hardware Monitor

■ Product Specifications

Form Factor	▪ Mini ITX (170mm x 170mm)
Processor	▪ Intel Atom N270 processor
Memory	▪ 1 x long DIMM for DDR2 supported
Chipset	▪ Intel945GSE + ICH7-M
Graphics	▪ Integrated on 945GSE chipset ● 1 x DB-15 connector for VGA output on rear I/O ● 1 x 2x8-pin pitch 2.54mm header for VGA output, signals share with DB-15 ● Dual Channel 18/24-bits LVDS supported ● 1 x 5-pin wafer connector for LVDS power supply ● 1 x 3-pin pitch 2.54mm header for LCD voltage selection
Ethernet	▪ 2 x Realtek RTL8111C Gigabit Ethernet Controllers (co-layout with RTL8102B) ● 2 x RJ-45 w/z Gb/s transformer connectors on rear I/O ● PXE & RPL supported
Audio	▪ Realtek ALC622-VC HD codec on board ● 1 x stack connector for Line-Out and Mic-In ● 1 x 2x5-pin pitch 2.54mm header for front audio
Peripheral Support	▪ 2 x 7-pin SATA connectors ▪ 1 x 2x22-pin pitch 2.0mm box header for IDE interface ▪ 8 x USB2.0 ports ● 2 x stack connectors for four ports on rear I/O, stack with RJ-45 connector ● 3 x 5-pin pitch 2.54mm headers for three internal ports ● 1 x USB2.0 port support by mini PCIe slot ▪ 10 x COM ports supported (ITE super I/O) ● 1 x DB-9 connector for COM1 on rear I/O ● 9 x 2x5-pin pitch 2.54mm headers for COM2 to COM10 ● +5V & +12V voltage support on COM1 to COM10 ● COM6 with TTL level supported ▪ 1 x LPT port supported ● 1 x DB-25 connector on rear I/O ● 1 x 2x13-pin pitch 2.54mm header for internal ▪ 1 x KB/MS supported ● 1 x stack mini din connector for keyboard and mouse on rear I/O ● 1 x 2x5-pin pitch 2.54mm header for internal ▪ 1 x 2x5-pin pitch 2.54mm connector for 8-bits digital I/O ● Digital I/O supported by super I/O chip ● 4-bits input and 4-bits output ▪ 1 x 3-pin fan connector for CPU cooler fan ▪ 1 x Buzzer on board
Expansion Slot	▪ 1 x PCI slot support two PCI master ▪ 1 x mini-PCIe slot
WatchDog Timer	▪ 1-255 step, can be set with software on Super I/O
BIOS	▪ AMI Plug & Play BIOS ▪ ACPI support S0, S1, S3, S4 and S5 supported ▪ PCI interrupt selection ▪ Audio and LANs function on/off control by BIOS ▪ Hot key (F11) for boot up devices selection
Hardware Monitor	▪ Supply voltages detection ▪ CPU and system temperature ▪ Fan speed detection
Battery	▪ Lithium, 3V
Power	▪ 1 x 20-pin standard ATX power connector ▪ AT/ATX Power Support
Temp.	▪ Operation : 0ºC – 60ºC Storage: -10ºC – 85ºC
Humidity	▪ 0% – 90%
Certifications	▪ CE, FCC Class A

Table 1 KEMX-2130 Specification

■ Product Comparison Chart

Model Name	KEMX-2130	KEMX-2131	KEMX-2132
LVDS	Dual Channel 18/24-bits	Dual Channel 18-bits	Dual Channel 18-bits
Ethernet	2 x GbE	1 x GbE	2 x GbE
COM port	10	8	6
Mini PCIE	1	No	1
AT Power Support	Yes	No	No

■ System Block Diagram

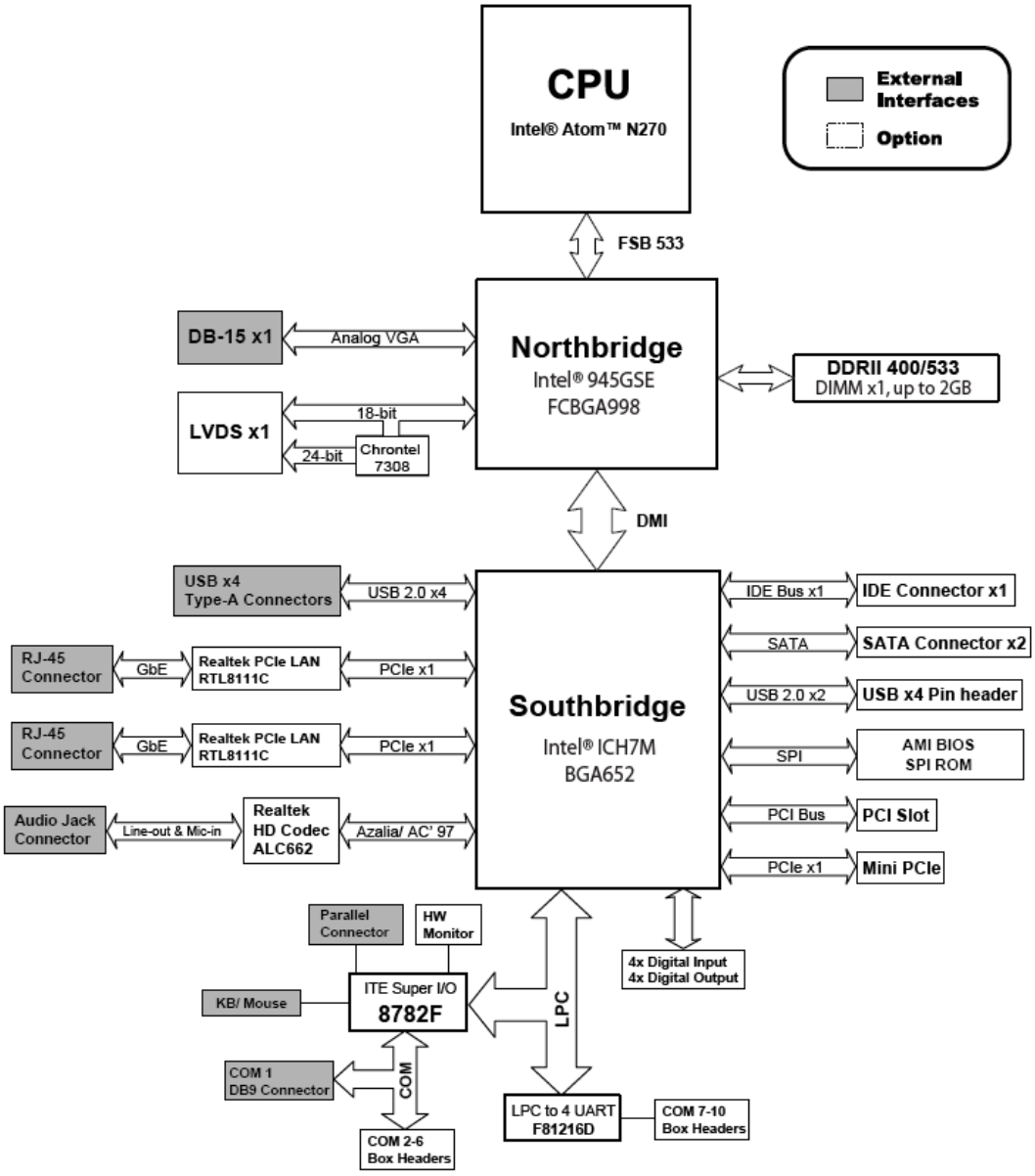


Figure 1 Block Diagram

■ Mechanical Dimensions

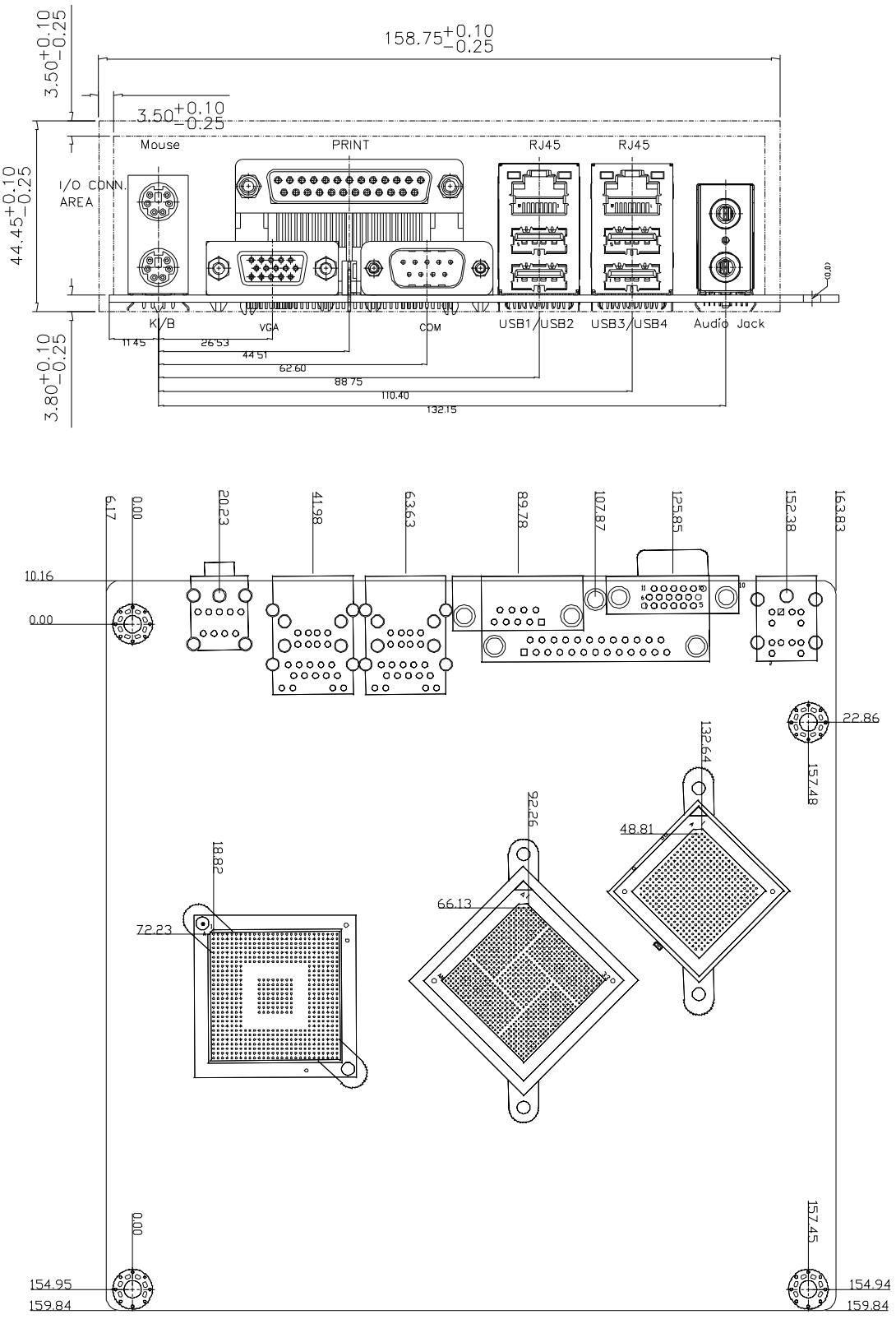


Figure 2 Mechanical Dimensions

Chapter 2

Hardware Settings

■ Overview

This chapter provides the definitions and locations of jumpers, headers, and connectors.

Jumpers

The product has several jumpers which must be properly configured to ensure correct operation.

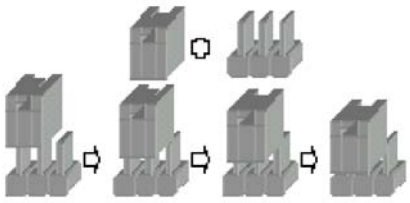


Figure 3 Jumper Connector

For a three-pin jumper (see *Figure 3*), the jumper setting is designated “1-2” when the jumper connects pins 1 and 2. The jumper setting is designated “2-3” when pins 2 and 3 are connected and so on. You will see that one of the lines surrounding a jumper pin is thick, which indicates pin No.1.
To move a jumper from one position to another, use needle-nose pliers or tweezers to pull the pin cap off the pins and move it to the desired position.

■ Jumper Settings and Pin Definitions

For jumper and connector locations, please refer to the diagrams below.

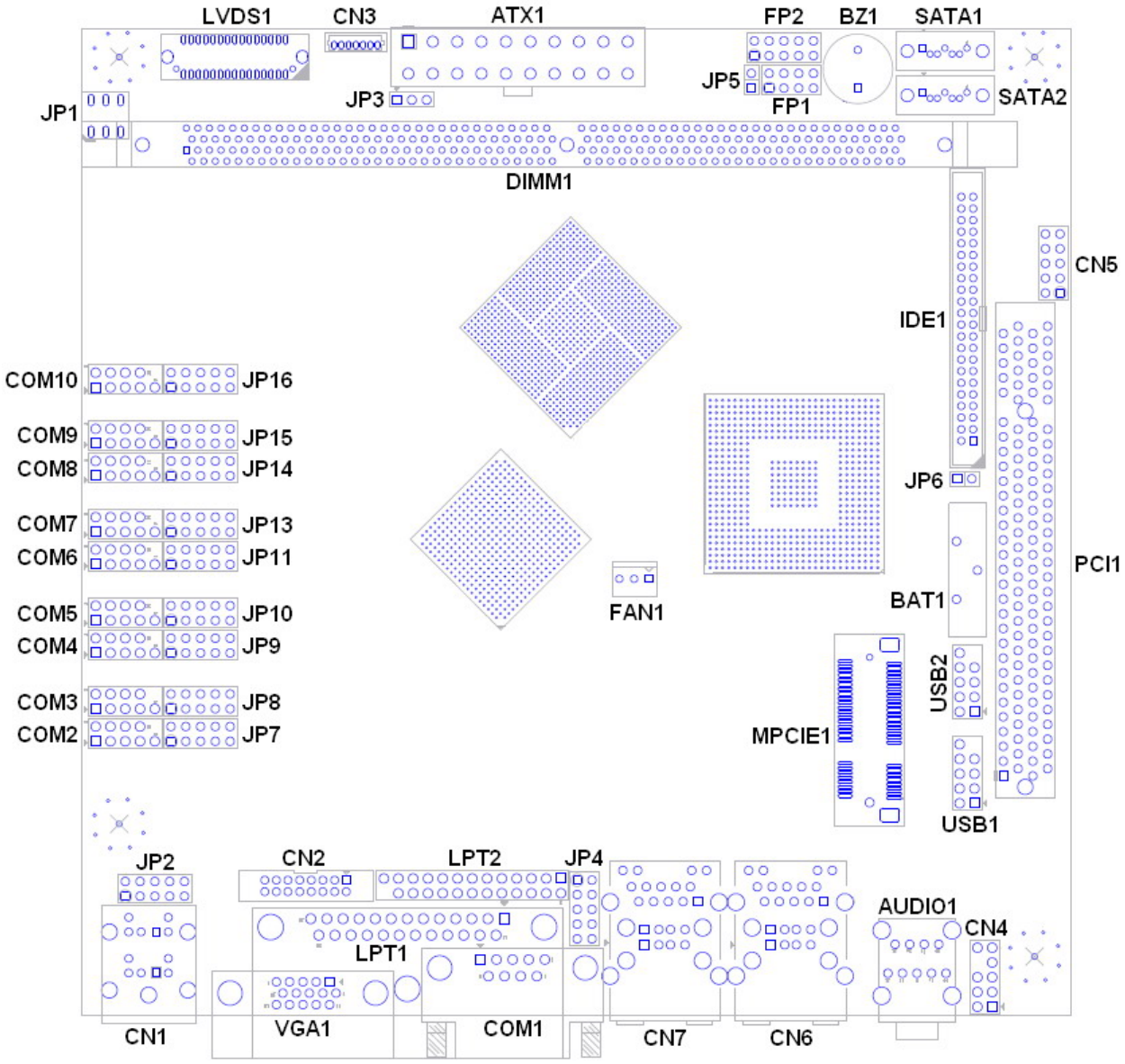


Figure 4 Jumper and Connector Locations

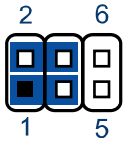
Jumper Settings

To ensure correct system configuration, the following section describes how to set the jumpers to enable/disable or change functions. For jumper descriptions, please refer to the table below.

Table 2 Jumper List

Label	Function
JP1	Backlight & Panel Power Selection
JP2	KB/MS Connector Selection
JP3	Backlight Enable Selection
JP5	Power Mode Selection
JP6	Clear CMOS Selection
JP4	COM1 Signal / Power Selection
JP7	COM2 Signal / Power Selection
JP8	COM3 Signal / Power Selection
JP9	COM4 Signal / Power Selection
JP10	COM5 Signal / Power Selection
JP11	COM6 Signal / Power Selection
JP13	COM7 Signal / Power Selection (for KEMX-2130/2031 only)
JP14	COM8 Signal / Power Selection (for KEMX-2130/2031 only)
JP15	COM9 Signal / Power Selection (for KEMX-2130 only)
JP16	COM10 Signal / Power Selection (for KEMX-2130 only)

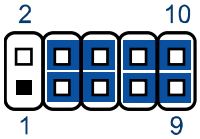
Table 3 JP1 Blacklight & Panel Power Selection



Jumper	Setting	Status
1	1-3	Backlight Power = +12V (default)
	3-5	Backlight Power = +5V
2	2-4	Panel Power = +3.3V (default)
	4-6	Panel Power = +5V

Pitch: 2.54mm [YIMTEX 3362*03SANGR]

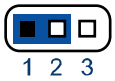
Table 4 JP2 KB/MS Connector Selection



Pin	Signal	Pin	Signal
1	+5VSB	2	GND
3	KBCLK_SIO	4	KBDAT_ SIO
5	KBCLK_CN7	6	KBDAT_CN7
7	MSCLK_SIO	8	MSDAT_SIO
9	MSCLK_CN7	10	MSDAT_CN7
3-5 4-6 Short	PS/2 Keyboard on CN1 is Enabled (default)	7-9 8-10 Short	PS/2 Mouse on CN1 is Enabled (default)

Pitch: 2.54mm [YIMTEX 3322*05SAGR(6T]

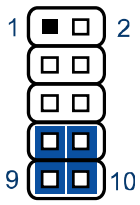
Table 5 JP3 Backlight Enable Selection



Jumper	Status
1-2	Active High (default)
2-3	Active Low

Pitch: 2.0mm [YIMTEX 3291*03SAGR(6T)]

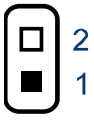
Table 6 JP4 COM1 Port Signal / Power Selection



Jumper	Setting	Function
1	1-3 Short	Pin 1 = +12V
	3-5 Short	Pin 1 = +5V
	5-7 Short	Pin 1 = +5V
	7-9 Short	Pin 1 = DCD@RS232, TX+@RS422, RTX+@RS485 (default)
2	2-4 Short	Pin 9 = +12V
	4-6 Short	Pin 9 = +5V
	6-8 Short	Pin 9 = +5V
	8-10 Short	Pin 9 = RI (default)

Pitch: 2.54mm [YIMTEX 3322*05SAGR(6T)]

Table 7 JP5 Power Mode Selection



Jumper	Status
Short	AT Mode (for KEMX-2130 only)
Open	ATX Mode (default)

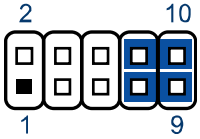
Pitch: 2.0mm [YIMTEX 3291*02SAGR(6T)]

Table 8 JP6 Clear CMOS Selection

Jumper	Status
Open	Normal Operation (default)
Short	Clear CMOS

Pitch: 2.0mm [YIMTEX 3291*02SAGR(6T)]

Table 9 JP7-11, JP13-16, COM2-10 Port Signal / Power Selection



Jumper	Setting	Function
1	1-3 Short	Pin 1 = +12V
	3-5 Short	Pin 1 = +5V
	5-7 Short	Pin 1 = +5V
	7-9 Short	Pin 1 = DCD@RS232 (default)
2	2-4 Short	RI Pin = +12V
	4-6 Short	RI Pin = +5V
	6-8 Short	RI Pin = +5V
	8-10 Short	RI Pin = RI (default)

Pitch: 2.54mm [YIMTEX 3322*05SAGR(6T)]

Rear Panel Pin Assignments

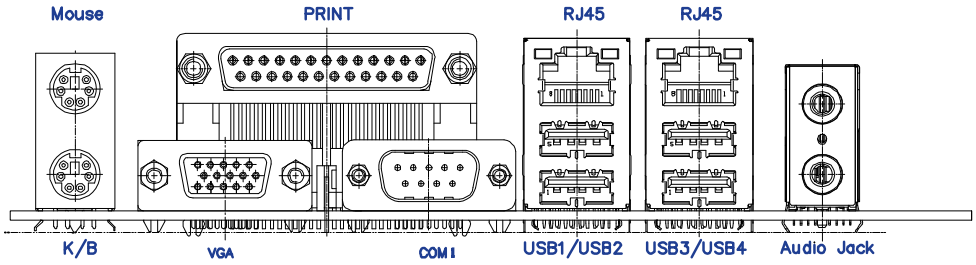
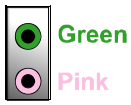


Figure 5 Rear Panel IO

Table 10 Rear Panel Connector List

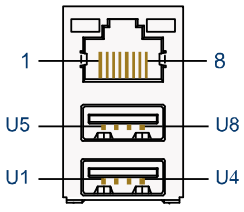
Label	Function
AUDIO Jack	2-Port Audio phone jack
USB1-4	USB2.0 Port 1-4 Type A Connector
RJ-45	GbE RJ-45 Connector
COM1	COM1, RS-232 Port A DB-9 Connector
VGA	VGA Connector DB-15 Connector
Print	Parallel Port Connector
Mouse	PS/2 Mouse Connector
K/B	PS/2 Keyboard Connector

Table 11 AUDIO Jack, 2-Port Audio phone jack



	Signal Name
GREEN	LINE OUT
PINK	MIC IN

Table 12 USB2.0 Port Connector & Ethernet RJ-45 Connector

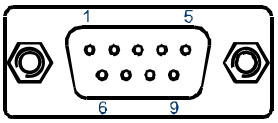


Pin	Signal	Pin	Signal
1	MDI[0]+	U1	+5V
2	MDI[0]-	U2	USB0-
3	MDI[1]+	U3	USB0+
4	MDI[1]-	U4	GND
5	MDI[2]+	U5	+5V
6	MDI[2]-	U6	USB1-
7	MDI[3]+	U7	USB1+
8	MDI[3]-	U8	GND

Table 13 LAN LED Status

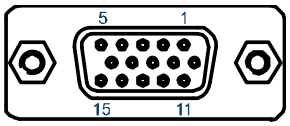
Status / Led	Orange / Green	Yellow
No link	Off	Off
10M link	Off	Off
10M active	Off	Blink
100M link	Green on	Off
100M active	Green on	Blink
1000M link	Orange on	Off
1000M active	Orange on	Blink

Table 14 COM1, RS-232 Port 1 DB-9 Connector



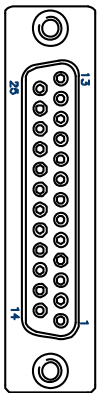
Pin	RS232	RS422	RS485
1	DCD, Data carrier detect	TX+	RTX+
2	RXD, Receive data	RX+	N/A
3	TXD, Transmit data	TX-	RTX-
4	DTR, Data terminal ready	RX-	N/A
5	GND, ground		
6	DSR, Data set ready		
7	RTS, Request to send		
8	CTS, Clear to send		
9	RI, Ring indicator		

Table 15 VGA DB-15 Connector



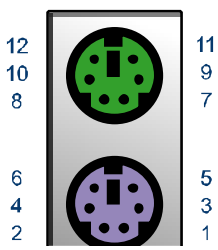
Signal Name	Pin	Pin	Signal Name
Red	1	2	Green
Blue	3	4	NC
GND	5	6	GND
GND	7	8	GND
VCC	9	10	GND
NC	11	12	DDC data
HSYNC	13	14	VSYNC
DDC clock	15		

Table 16 Parallel Port DB-25 Connector



Signal	Pin	Pin	Signal
Line printer strobe	1	14	AutoFeed
PD0, parallel data 0	2	15	Error
PD1, parallel data 1	3	16	Initialize
PD2, parallel data 2	4	17	Select In
PD3, parallel data 3	5	18	Ground
PD4, parallel data 4	6	19	Ground
PD5, parallel data 5	7	20	Ground
PD6, parallel data 6	8	21	Ground
PD7, parallel data 7	9	22	Ground
ACK, acknowledge	10	23	Ground
Busy	11	24	Ground
Paper empty	12	25	Ground
Select	13		

Table 17 PS/2 KB/MS Mini-DIN Connector



Pin	Signal	Function
1	KBDAT	Keyboard Data
2	NC	No Connect
3	GND	Ground
4	KB5V	+5VSB Power Source
5	KBCLK	Keyboard Clock
6	NC	No Connect
7	MSDAT	Mouse Data

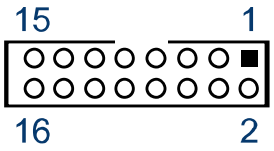
8	NC	No Connect
9	GND	Ground
10	KB5V	+5VSB Power Source
11	MSCLK	Mouse Clock
12	NC	No Connect

Main Board Pin Assignments

Table 18 Internal Connector List

Label	Function	Label	Function
CN2	VGA BOX HEADER	LPT2	Parallel Port Pin Header
CN3	Panel Backlight Wafer	MPCIE1	Mini PCIE slots
CN4	Front Panel Audio Pin Header	PCI1	PCI slots
CN5	Digital Input / Output Pin Header	COM2	RS-232 Port B With Power Wafer
DIMM1	DDR2 Memory Socket	COM3	RS-232 Port C With Power Wafer
FP1	Front Panel 1 Pin Header	COM4	RS-232 Port D With Power Wafer
FP2	Front Panel 2 Pin Header	COM5	RS-232 Port E With Power Wafer
LVDS1	LVDS Panel Pin Header	COM6	RS-232 Port F With Power Wafer
IDE1	44PIN 2.0mm Pin Header	COM7	RS-232 Port G With Power Wafer
SATA1	Serial ATA Connector	COM8	RS-232 Port H With Power Wafer
SATA2	Serial ATA Connector	COM9	RS-232 Port I With Power Wafer
USB1	USB2.0 Port 4, 5 Pin Header	COM10	RS-232 Port J With Power Wafer
USB2	USB2.0 Port 6, 7 Pin Header		

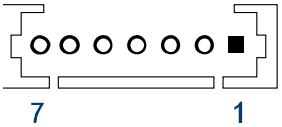
Table 19 CN2, VGA Box Header



Pin	Signal Name	Pin	Signal Name
1	VGA_R	2	VGA_G
3	VGA_B	4	N.C.
5	GND	6	GND
7	GND	8	GND
9	+5V	10	GND
11	N.C.	12	VGA_SDATA
13	VGA_HS	14	VGA_VS
15	VGA_SCLK	16	GND

DIP 16P 2R 180D P-2.0mm [PINREX 52S-90-16GB00]

Table 20 CN3, Panel Backlight Wafer



Pin	Signal Name
7	NC
6	BL_ADJ
5	GND
4	+5V / +12V **
3	+5V / +12V **
2	GND

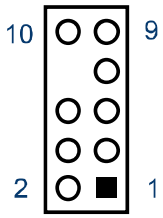
1	BL_EN / BL_EN# *

DIP 7P 180D P-1.25mm WAFER [YIMTEX 501MW1*07STR]

* The function can be selected by JP3.

** The function can be selected by JP1.

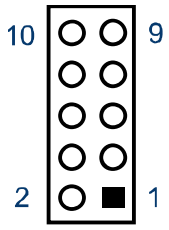
Table 21 CN4, Front Panel Audio Pin Header



Pin	Signal	Pin	Signal
1	MIC2-L	2	Audio GND
3	MIC2-R	4	ACZ_DET#
5	Line2-R	6	MIC2_JD
7	FIO_Sense	8	Key
9	Line2-L	10	Line2_JD

Pitch:2.54mm w/o Pin 8 [YIMTEX 3322*05SAGR(6T)-08]

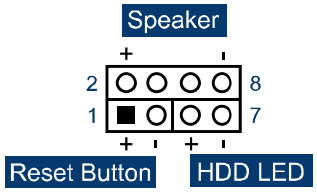
Table 22 CN5, Digital Input / Output Pin Header



Pin	Signal	Pin	Signal
1	Digital Output 0	2	Digital Input 0
3	Digital Output 1	4	Digital Input 1
5	Digital Output 2	6	Digital Input 2
7	Digital Output 3	8	Digital Input 3
9	+5V	10	GND

Pitch: 2.0mm [YIMTEX 3292*05SAGR(6T)]

Table 23 FP1 Front Panel 1 Pin Header



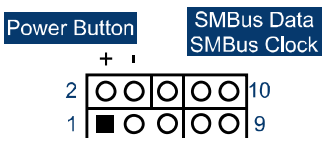
Pin	Signal	Pin	Signal
1	Reset Button +	2	Speaker +
3	Reset Button -	4	NC
5	HDD LED +	6	NC
7	HDD LED -	8	Speaker -

Pins 2, 8: External Speaker wire

Pins 6-8 shorted: Internal Speaker Enable (default)

Pitch: 2.54mm [YIMTEX 3322*04SAGR]

Table 24 FP2 Front Panel 2 Pin Header

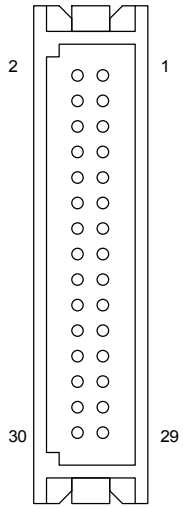


Pin	Signal	Pin	Signal
1	Power LED +	2	Power Button +
3	NC	4	Power Button -

5	Power LED -	6	NC
7	Keyboard Lock	8	SMBus Data
9	GND	10	SMBus Clock

Pitch: 2.54mm [YIMTEX 3322*05SAGR]

Table 25 LVDS1, LVDS Panel Connector (Dual Channel 18/24-bits)

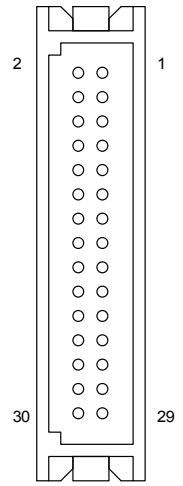


Signal Name	Pin	Pin	Signal Name
BL_ADJ	2	1	BL_EN
+3.3V / +5V*	4	3	+3.3V / +5V*
TxclkB-	6	5	TxclkA-
TxclkB+	8	7	TxclkA+
GND	10	9	GND
TxoutB0-	12	11	TxoutA0-
TxoutB0+	14	13	TxoutA0+
TxoutB1-	16	15	TxoutA1-
TxoutB1+	18	17	TxoutA1+
TxoutB2-	20	19	TxoutA2-
TxoutB2+	22	21	TxoutA2+
TxoutB3-	24	23	TxoutA3-
TxoutB3+	26	25	TxoutA3+
GND	28	27	GND
I2C_Clock	30	29	I2C_Data

* The function can be selected by JP3.

Pitch: 1.25mm [HIROSE DF13-30DP-1.25V(26)]

Table 26 LVDS1, LVDS Panel Connector (Dual Channel 18-bits)



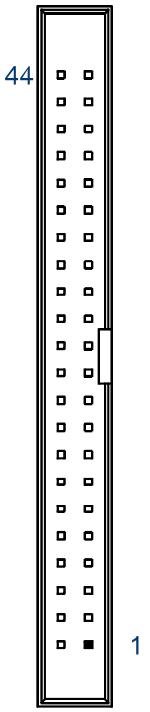
Signal Name	Pin	Pin	Signal Name
BL_ADJ	2	1	BL_EN
+3.3V / +5V*	4	3	+3.3V / +5V*
TxclkB-	6	5	TxclkA-
TxclkB+	8	7	TxclkA+
GND	10	9	GND
TxoutB0-	12	11	TxoutA0-
TxoutB0+	14	13	TxoutA0+
TxoutB1-	16	15	TxoutA1-
TxoutB1+	18	17	TxoutA1+
TxoutB2-	20	19	TxoutA2-
TxoutB2+	22	21	TxoutA2+
NC	24	23	NC
NC	26	25	NC
GND	28	27	GND

I2C_Clock	30	29	I2C_Data

* The function can be selected by JP3.

Pitch: 1.25mm [HIROSE DF13-30DP-1.25V(26)]

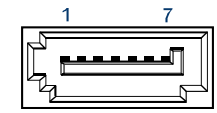
Table 27 IDE1, Primary 44-pin IDE Box Header



Signal Name	Pin	Pin	Signal Name
Reset IDE	1	2	GND
IDE Data 7	3	4	IDE Data 8
IDE Data 6	5	6	IDE Data 9
IDE Data 5	7	8	IDE Data 10
IDE Data 4	9	10	IDE Data 11
IDE Data 3	11	12	IDE Data 12
IDE Data 2	13	14	IDE Data 13
IDE Data 1	15	16	IDE Data 14
IDE Data 0	17	18	IDE Data 15
Ground	19	20	NC
DREQ0	21	22	GND
IDEIOW#	23	24	GND
IDEIOR#	25	26	GND
IDEIORDY	27	28	CBSEL
DACK0#	29	30	GND
IDEIRQ14	31	32	NC
IDE Address 1	33	34	PDIAG#
IDE Address 0	35	36	IDE Address 2
IDE Chip select 1#	37	38	IDE Chip select 3#
IDE activity	39	40	GND
+5V	41	42	+5V
GND	43	44	NC

Pitch: 2.0mm [YIMTEX 32644SAGR(6T)]

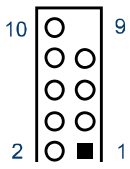
Table 28 SATA1,2: SATA Connector



Pin	Signal Name	Pin	Signal Name
1	GND	5	RX-
2	TX+	6	RX+
3	TX-	7	GND
4	GND		

DIP 7P 180D CONNECTOR SATA BLACK [HI-TOP H16AB02300BAR]

Table 29 USB1, USB2.0 Port 4, 5 Pin Headers

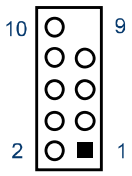


Pin	Signal Name	Pin	Signal Name
1	+5V	2	+5V
3	USB4-	4	USB5-
5	USB4+	6	USB5+
7	GND	8	GND

9	KEY	10	GND

Pitch: 2.54mm [YIMTEX 3322*05SAGR(6T) -09]

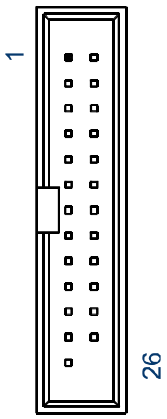
Table 30 USB2, USB2.0 Port 6, 7 Pin Header



Pin	Signal Name	Pin	Signal Name
1	+5V	2	+5V
3	USB4-	4	USB5-
5	USB4+	6	USB5+
7	GND	8	GND
9	KEY	10	GND

Pitch: 2.54mm [YIMTEX 3322*05SAGR(6T) -09]

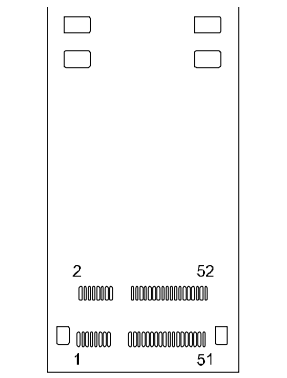
Table 31 LPT2, Parallel Wafer

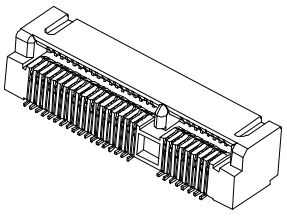


Pin	Signal Name	Pin	Signal Name
1	STB	2	#AFD
3	PD0	4	#ERR
5	PD1	6	#INIT
7	PD2	8	#SLIN
9	PD3	10	GND
11	PD4	12	GND
13	PD5	14	GND
15	PD6	16	GND
17	PD7	18	GND
19	#ACK	20	GND
21	BUSY	22	GND
23	PE	24	GND
25	SLCT	26	GND

DIP 26P 2R MALE 180° Pitch: 2.54mm [PINREX 210-72-13GB11]

Table 32 MPCIE1, Mini PCIe Connector



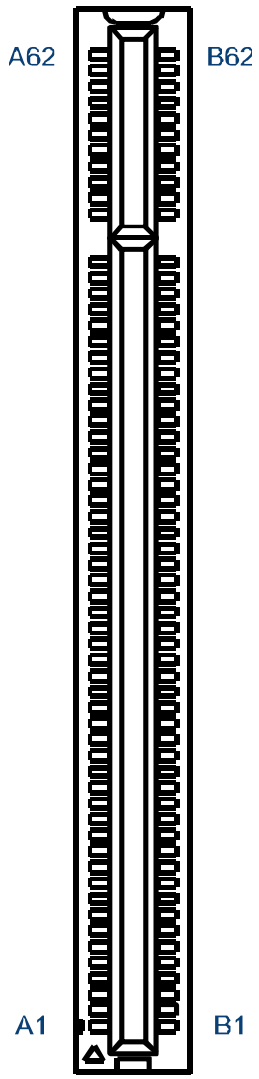


Signal	Pin	Pin	Signal
WAKE#	1	2	+3.3V
Reserved	3	4	Ground
Reserved	5	6	+1.5V
CLKEQ#	7	8	UIM_PWR
Ground	9	10	UIM_DATA
REFCLK-	11	12	UIM_CLK
REFCLK+	13	14	UIM_RESET
Ground	15	16	UIM_VPP
Reserved	17	18	Ground
Reserved	19	20	W_disable#
Ground	21	22	PERST#
PERn0	23	24	+3VSB
PERp0	25	26	Ground
Ground	27	28	+1.5V
Ground	29	30	SMB_CLK
PETn0	31	32	SMB_DATA
PETp0	33	34	Ground
Ground	35	36	USB_D-
Reserved	37	38	USB_D+
Reserved	39	40	Ground
Reserved	41	42	LED_WWAN#
Reserved	43	44	LED_WAN#
Reserved	45	46	LED_WPAN#
Reserved	47	48	+1.5V

Reserved	49	50	Ground
Reserved	51	52	+3.3V

[FOXCONN AS0B226-S56N-7F]

Table 33 PCI1, 32-bit / 33Mhz / 5V-key PCI Slot

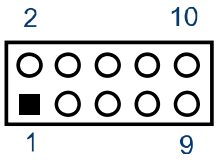


5V Board PCI Revision 2.1			
Pin	**Side B**	**Side A**	**Comments**
1	-12V	TRST_L	32-bit start
2	TCK	+12V	
3	Ground	TMS	
4	TDO	TDI	
5	+5V	+5V	
6	+5V	INTA_L	
7	INTB_L	INTC_L	
8	INTD_L	+5V	
9	PRSNT1_L	Reserved	
10	Reserved	+5V	
11	PRSNT2_L	Reserved	
12	Ground	Ground	3.3V key
13	Ground	Ground	3.3V key
14	Reserved	Reserved	
15	Ground	RST_L	
16	CLK	+5V	
17	Ground	GNT_L	
18	REQ_L	Ground	
19	+5V	Reserved	
20	AD[31]	AD[30]	
21	AD[29]	+3.3V	
22	Ground	AD[28]	
23	AD[27]	AD[26]	
24	AD[25]	Ground	
25	+3.3V	AD[24] +3.3V	
26	C/BE[3]_L	IDSEL	
27	AD[23]	+3.3V	
28	Ground	AD[22]	
29	AD[21]	AD[20]	
30	AD[19]	Ground	
31	+3.3V	AD[18]	
32	AD[17]	AD[16]	
33	C/BE[2]_L	+3.3V	
34	Ground	FRAME_L	
35	IRDY_L	Ground	
36	+3.3V	TRDY_L	
37	DEVSEL_L	Ground	
38	Ground	STOP_L	
39	LOCK_L	+3.3V	
40	PERR_L	Reserved	
41	+3.3V	Reserved	
42	SERR_L	Ground	
43	+3.3V	PAR	
44	C/BE[1]_L	AD[15]	
45	AD[14]	+3.3V	
46	Ground	AD[13]	
47	AD[12]	AD[11]	
48	AD[10]	Ground	
49	Ground	AD[09]	
50	KEYWAY	KEYWAY	5V key
51	KEYWAY	KEYWAY	5V key
52	AD[08]	C/BE[0]_L	
53	AD[07]	+3.3V	
54	+3.3V	AD[06]	
55	AD[05]	AD[04]	
56	AD[03]	Ground	
57	Ground	AD[02]	
58	AD[01]	AD[00]	
59	+5V	+5V	

5V Board PCI Revision 2.1			
Pin	**Side B**	**Side A**	**Comments**
60	ACK64_L	REQ64_L	
61	+5V	+5V	
62	+5V	+5V	32-bit end

PCI 60*2P 180D (F) [FOXCONN EH06001-DAW-DF]

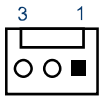
Table 34 COMX, RS-232 Port-X Box Header（x = 2, 3, 4,5,6,7,8,9,10）



Pin	Signal
1	+5V / +12V / DCD, Data carrier detect Note：Selected by Jumpers (see Table.9)
2	RXD, Receive data
4	DTR, Data terminal ready
5	GND, ground
3	TXD, Transmit data
6	DSR, Data set ready
7	RTS, Request to send
8	CTS, Clear to send
9	RI, Ring indicator (+5V / +12V) Note：Selected by Jumpers (see Table.9)
10	NC

Pitch: 2.54mm [YIMTEX 32510SAG1R(6T)]

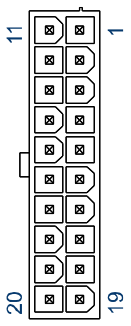
Table 35 CPU FAN Wafer



Pin	Signal
1	GND
2	+12V
3	FAN_RPM

Pitch: 2.54mm YIMTEX 521AW1*03STR

Table 36 ATX Power Connector



PIN	SIGNAL	PIN	SIGNAL
1	+3.3V	11	+3.3V
2	+3.3V	12	-12V
3	Ground	13	Ground
4	+5V	14	PS-ON
5	Ground	15	Ground
6	+5V	16	Ground
7	Ground	17	Ground
8	PW-OK	18	-5V
9	5VSB	19	+5V
10	+12V	20	+5V

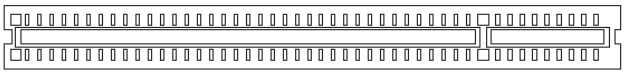
Chapter 3

System Installation

■ Expansive Interfaces

The board comes with one PCI slot and one Mini-PCI interface.

32-bit, 33MHz PCI slot



1x Mini PCIe socket

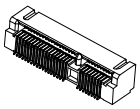


Figure 6 Expansive Interfaces

NOTE

When adding or removing expansion cards, make sure that you unplug the power supply first. Meanwhile, read the documentation for the expansion card to configure any necessary hardware or software settings for the expansion card, such as jumpers, switches or BIOS configuration.

■ Memory Module Installation

Figure below displays the notch marks as they should look on your DIMM memory modules. DDR2 DIMMs have 240-pins and one notch that will match with the onboard DIMM sockets. DIMM modules are installed by placing the chip firmly into the socket at a 90-degree angle and pressing straight down until it fits tightly into the DIMM socket.

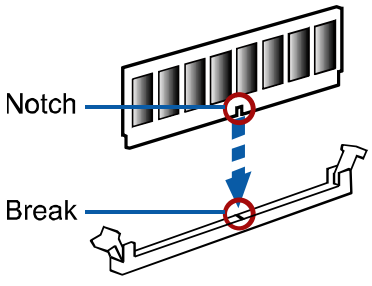


Figure 7 DIMM Memory and 240-pin Socket

Installing a DIMM

Carefully follow the steps below in order to install the DIMMs:

To avoid generating static electricity and damaging the DIMM, ground yourself by touching a grounded metal surface or using a ground strap before you touch the DIMM.

1. Do not touch the connectors of the DIMM. Dirt or other residue may cause a malfunction.
2. Hold the DIMM with its notch aligned with the memory socket of the KEMX-2130 and insert it completely into the socket. Lift the locking tabs at each end of the DIMM socket to lock it in position.
3. If you install two DIMMs, install the second DIMM using the same procedure as above.
4. If the DIMM does not go in smoothly, do not force it. Pull it all the way out and try again.
5. Make sure the DIMM is properly installed and locked by the tabs on both sides of the socket.

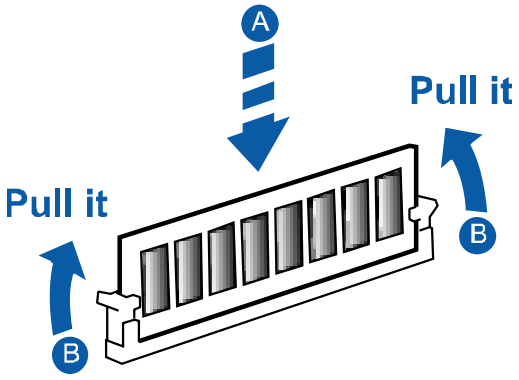


Figure 8 Memory Installation

Removing a DIMM:

To remove the DIMM, use your fingers or a small screwdriver to carefully push away the plastic tabs that secure the DIMM at each end. Lift it out of the socket.

NOTE

Make sure you store the DIMM in an anti-static bag. The socket must be populated with memory modules of the same size and manufacturer.

Chapter 4

AMI BIOS Setup

■ Overview

This chapter provides a description of the AMI BIOS. The BIOS setup menus and available selections may vary from those of your product. For specific information on the BIOS for your product, please contact Quanmax.

NOTE: The BIOS menus and selections for your product may vary from those in this chapter. For the BIOS manual specific to your product, please contact Quanmax

AMI's ROM BIOS provides a built-in Setup program, which allows the user to modify the basic system configuration and hardware parameters. The modified data will be stored in a battery-backed CMOS, so that data will be retained even when the power is turned off. In general, the information saved in the CMOS RAM will not need to be changed unless there is a configuration change in the system, such as a hard drive replacement or when a device is added.

It is possible for the CMOS battery to fail, which will cause data loss in the CMOS only. If this happens you will need to reconfigure your BIOS settings.

■ Main Menu

The BIOS Setup is accessed by pressing the DEL key after the Power-On Self-Test (POST) memory test begins and before the operating system boot begins. Once you enter the BIOS Setup Utility, the Main Menu will appear on the screen. The Main Menu provides System Overview information and allows you to set the System Time and Date. Use the "<" and ">" cursor keys to navigate between menu screens.

Table 37 BIOS Main Menu

BIOS SETUP UTILITY		
Main Advanced Boot Chipset Power Security Exit		
System Date	[Wed 6/05/2009]	Use [ENTER], [TAB] or [SHIFT-TAB] to select a field.
System Time	[10:18:15]	
> SATA1	:[Not Detected]	Use [+] or [-] to configure system Time.
> SATA2	:[Not Detected]	
> Secondary IDE Master	:[Not Detected]	
> System Information		<> Select Screen ↑↓ Select Item +- Change Field Tab Select Field F1 General Help F10 Save and Exit ESC Exit
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Below table is described for SATA1, SATA2 and Secondary IDE Master

Table 38 IDE Device Setting Menu

BIOS SETUP UTILITY		
Main		
Primary Master		Disable: Disables LBA Mode. Auto: Enables LBA Mode if the device supports it and the device is not already formatted with LBA Mode disabled.
Device	:Not Detected	
LBA/ Large Mode	**[Auto]**	
DMA Mode	[Auto]	
S.M.A.R.T	[Auto]	<> Select Screen ↑↓ Select Item +- Change Field Tab Select Field F1 General Help F10 Save and Exit ESC Exit
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LBA/ Large Mode [Auto]

Enables or disables the LBA (Logical Block Addressing)/ Large mode. Setting to Auto enables the LBA mode if the device supports this mode, and if the device was

not previously formatted with LBA mode disabled. Options: Disabled, Auto

DMA Mode [Auto]

Options: Auto

S.M.A.R.T [Auto]

SMART stands for Smart Monitoring, Analysis, and Reporting Technology. It allows AMIBIOS to use the SMART protocol to report server system information over a network. Options: Auto, Disabled, Enabled

Table 39 System Information

BIOS SETUP UTILITY	
Main	
BIOS Version : 1.00 Build Date: :05/20/09 Processor Genuine Intel® Atom™ CPU N270 @ 1.60GHz Speed :1600MHz Count :1 System Memory Size :1016MB	<> Select Screen ↑↓ Select Item +- Change Field Tab Select Field F1 General Help F10 Save and Exit ESC Exit
V02.61 (C)Copyright 1985-2006, American Megatrends, Inc.	

■ Advanced Menu

Table 40 Advanced Menu

BIOS SETUP UTILITY	
Main **Advanced** Boot Chipset Power Security Exit	
Advanced Settings **Warning: Setting wrong values in below sections may cause system to malfunction.** > I/O Configuration > OnBoard Peripherals Configuration > Hardware Health Configuration	<> Select Screen ↑↓ Select Item +- Change Field Tab Select Field F1 General Help F10 Save and Exit ESC Exit
V02.61 (C)Copyright 1985-2006, American Megatrends, Inc.	

Press <Enter> to select a sub-menu for detailed options.

Table 41 Onboard I/O Configuration

BIOS SETUP UTILITY						
Main	**Advanced**	Boot	Chipset	Power	Security	Exit

Onboard I/O Configuration		Allow BIOS to Select Serial Port1 Base Address.
Serial Port1 Address	**[3F8]**	
Serial Port1 IRQ	[4]	
COM1 Function Type	[RS232]	
Serial Port2 Address	[2F8]	
Serial Port2 IRQ	[4]	
Serial Port3 Address	[3E8]	<> Select Screen
Serial Port3 IRQ	[11]	↑↓ Select Item
Serial Port4 Address	[2E8]	+- Change Field
Serial Port4 IRQ	[11]	Tab Select Field
Serial Port5 Address	[2F0]	F1 General Help
Serial Port5 IRQ	[5]	F10 Save and Exit
Serial Port6 Address	[2E0]	ESC Exit
Serial Port6 IRQ	[5]	
Serial Port7 Address	[2B0]	
Serial Port7 IRQ	[3]	
Serial Port8 Address	[2B8]	
Serial Port8 IRQ	[3]	
Serial Port9 Address	[2C0]	
Serial Port9 IRQ	[10]	
Serial Port10 Address	[2C8]	
Serial Port10 IRQ	[10]	
Parallel Port Address	[378]	
Parallel Port Mode	[Normal]	
Parallel Port IRQ	[IRQ7]	

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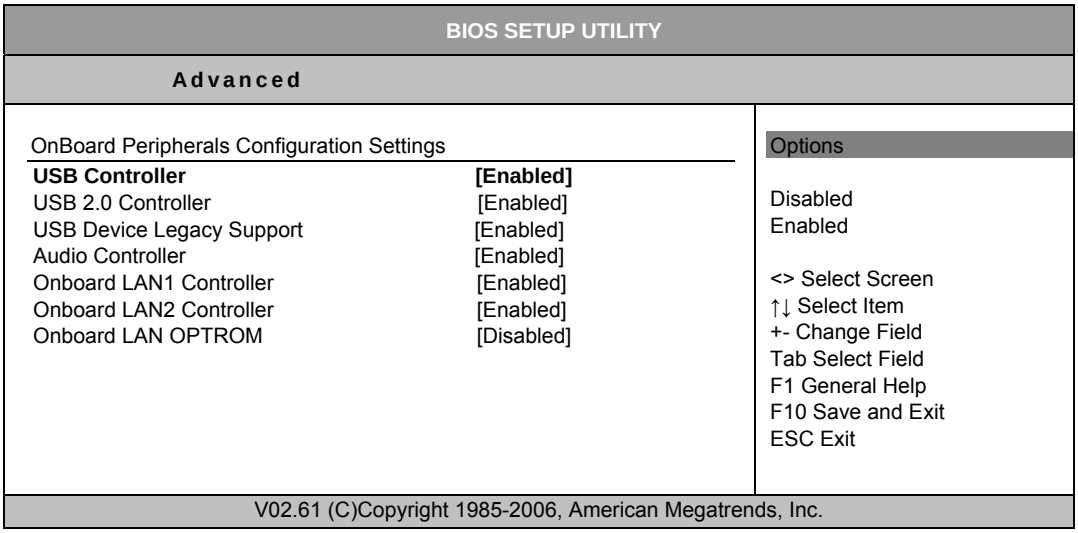
Serial Port1 Address [3F8]
Options: Disabled, 3F8, 3E8, 2E8
Serial Port1 IRQ [4]
Options: 3, 4, 10, 11
COM1 Function Type [RS232]
Options: RS232, RS422, RS485
Serial Port2 Address [2F8]
Options: Disabled, 2F8, 3E8, 2E8
Serial Port2 IRQ [4]
Options: 3, 4, 10, 11
Serial Port3 Address [3E8]
Options: Disabled, 3F8, 2F8, 3E8, 2E8, 2F0, 2E0
Serial Port3 IRQ [11]
Options: 3, 4, 10, 11
Serial Port4 Address [2E8]
Options: Disabled, 3F8, 2F8, 3E8, 2E8, 2F0, 2E0
Serial Port4 IRQ [11]
Options: 3, 4, 10, 11
Serial Port5 Address [2F0]
Options: Disabled, 3F8, 2F8, 3E8, 2E8, 2F0, 2E0
Serial Port5 IRQ [5]
Options: 3, 4, 5, 6, 7, 10, 11
Serial Port6 Address [2E0]
Options: Disabled, 3F8, 2F8, 3E8, 2E8, 2F0, 2E0
Serial Port6 IRQ [5]
Options: 3, 4, 5, 6, 7, 10, 11

Serial Port7 Address [2B0]
Options: Disabled, 2B0, 2B8, 2C0, 2C8, 2D0, 2D8
Serial Port7 IRQ [3]
Options: 3, 6, 7, 10
Serial Port8 Address [2B8]
Options: Disabled, 2B0, 2B8, 2C0, 2C8, 2D0, 2D8
Serial Port8 IRQ [3]
Options: 3, 6, 7, 10
Serial Port9 Address [2C0]
Options: Disabled, 2B0, 2B8, 2C0, 2C8, 2D0, 2D8
Serial Port9 IRQ [10]
Options: 3, 6, 7, 10
Serial Port10 Address [2C8]
Options: Disabled, 2B0, 2B8, 2C0, 2C8, 2D0, 2D8
Serial Port10 IRQ [10]
Options: 3, 6, 7, 10
Parallel Port Address [378]
Options: Disabled, 378, 278, 3BC
Parallel Port Mode [Normal]
Options: Normal, EPP, ECP, EPP+ECP
Parallel Port IRQ [IRQ7]
Options: IRQ5, IRQ7

Table 42 OnBoard Peripherals Configuration Settings



USB Controller [Enabled]

Options: Enabled, Disabled

USB 2.0 Controller [Enabled]

Options: Enabled, Disabled

USB Device Legacy Support [Enabled]

Options: Enabled, Disabled, Auto

Audio Controller [Enabled]

Options: Enabled, Disabled

Onboard LAN1 Controller [Enabled]

Options: Enabled, Disabled

Onboard LAN2 Controller [Enabled]

Options: Enabled, Disabled

Onboard LAN OPTROM [Disabled]

Options: Enabled, Disabled

Table 43 Hardware Health Configuration

BIOS SETUP UTILITY		
Advanced		
Hardware Health Configuration		
CPU Warning Temperature	[Disabled]	
CPU Shutdown Temperature	[Disabled]	
Temperature Sensor #1	:57°C/ 134°F	
Temperature Sensor #1	:43°C/ 109°F	
Fan Speed	:3078RPM	<> Select Screen ↑↓ Select Item +- Change Field Tab Select Field F1 General Help F10 Save and Exit ESC Exit
+VCORE	:1.136 V	
+1.05V	:1.040 V	
+3.3V	:3.166 V	
+5V	:4.958 V	
+12V	:11.182 V	
+VCC RTC	:3.365 V	
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CPU Warning Temperature

Options: Disabled, 80°C/176°F, 85°C/185°F, 90°C/194°F, 95°C/203°F

CPU Shutdown Temperature

Options: Disabled, 80°C/176°F, 85°C/185°F, 90°C/194°F, 95°C/203°F

■ Boot Menu

Table 44 Boot Menu

BIOS SETUP UTILITY						
Main	Advanced	**Boot**	Chipset	Power	Security	Exit

Boot Settings		Allow BIOS to Skip certain tests while booting. This will decrease the time needed to boot the system.
Quick Boot	**[Enabled]**	
Bootup Num-Lock	[ON]	
Wait For 'F1' If Error	[Enabled]	
Hit 'DEL'Message Display	[Enabled]	
		<> Select Screen ↑↓ Select Item +- Change Field Tab Select Field F1 General Help F10 Save and Exit ESC Exit

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Quick Boot [Enabled]

Enabling this item allows BIOS to skip some Power On Self Tests (POST) while booting to decrease the time needed to boot the system. When set to [Disabled], BIOS performs all the POST items.

Options: Disabled, Enabled

Bootup Num-Lock [On]

Allow you to select the power-on state for the NumLock.

Options: Off, On

Wait for 'F1' If Error [Enabled]

When set to Enabled, the system waits for F1 key to be pressed when error occurs.

Options: Disabled, Enabled

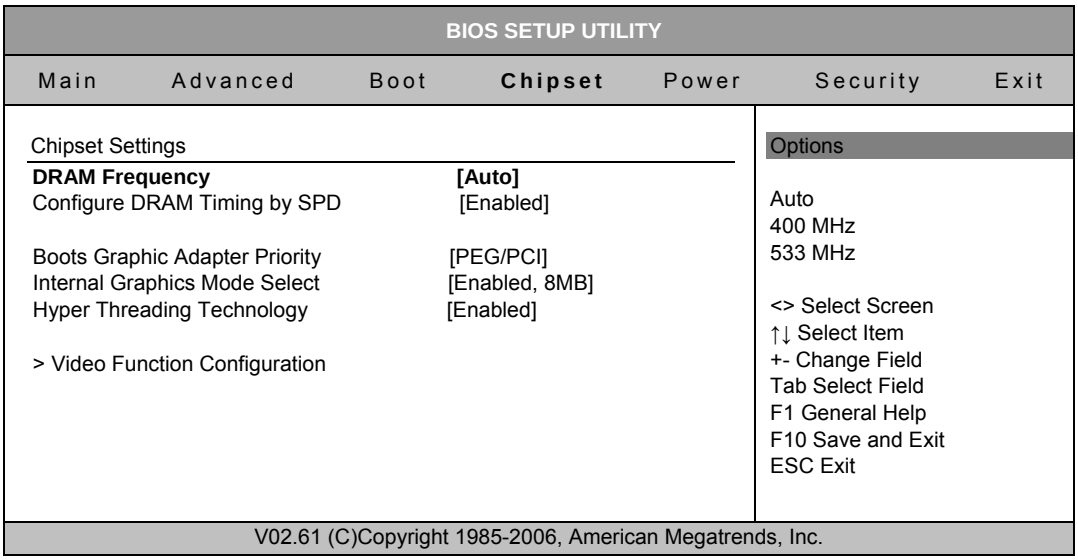
Hit 'DEL' Message Display [Enabled]

When set to Enabled, the system displays the message 'Press DEL to run Setup' during POST.

Options: Disabled, Enabled

■ Chipset Menu

Table 45 Chipset Menu



DRAM Frequency [Auto]

Options: Auto, 400 MHz, 533MHz

Configure DRAM Timing by SPD [Enabled]

Options: Disabled, Enabled

Boots Graphic Adapter Priority [PEG/PCI]

Select which graphics controller to use as the primary boot device.

Options: IGD, PCI/IGD, PCI/PEG, PEG/IGD, PEG/PCI

Internal Graphics Mode Select [Enabled 8M]

Select the amount of system memory used by the Internal graphics device.

Options: Disabled, Enabled 1MB, Enabled 8M

Hyper Threading Technology [Enabled]

Options: Disabled, Enabled

■ Video Function Configuration

Table 46 Video Function Configuration

BIOS SETUP UTILITY		
Chipset		
Video Function Configuration		Options
DVMT Mode Select	[DVMT Mode]	Fixed Mode DVMT Mode Combo Mode
DVMT/FIXED Memory	[128M]	
Boot Display Device	[VGA]	
Flat Panel Type	[1024X768 24Bit 1C]	
Local Flat Panel Scaling	[Auto]	
Panel BackLight Voltage	[2.5]	
		<> Select Screen ↑↓ Select Item +- Change Field Tab Select Field F1 General Help F10 Save and Exit ESC Exit
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DVMT Mode Select [DVMT Mode]

Options: Fixed Mode, DVMT Mode, Combo Mode

DVMT/FIXED Memory [128MB]

Options: 64MB, 128MB, Maximum DVMT

Boot Display Device [VGA]

Options: VGA, LVDS, VGA+LVDS

Flat Panel Type [1024x768 24Bit 2C]

Options:

640x480	24Bit 1CH
1024x768	24Bit 1CH
1280x1024	24Bit 2CH
1600x1200	24Bit 2CH

Local Flat Panel Scaling [Auto]

Options: Auto, Forced Scaling, Disabled

Panel BackLight Voltage [2.5]

Options: Min 0.0V, Max: 5.0V

■ Power Menu

Table 47 Power Menu

BIOS SETUP UTILITY						
Main	Advanced	Boot	Chipset	**Power**	Security	Exit

Power Management Setting		Select the ACPI state used for System Suspend
ACPI Function	[Enabled]	
Suspend mode	[S3 (STR)]	<> Select Screen
Repost Video on S3 Resume	[No]	↑↓ Select Item
Suspend Time Out	[Disabled]	+- Change Field
Restore on AC Power Loss	[Power Off]	Tab Select Field
Resume By USB Device	[Disabled]	F1 General Help
Resume On PME#	[Disabled]	F10 Save and Exit
Resume On RTC Alarm	[Disabled]	ESC Exit

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ACPI Function [Enabled]

Enable/ Disable ACPI support for Operating System.

ENABLE: If OS supports ACPI, DISABLE: IF OS Does not support ACPI.

Suspend mode [S3 (STR)]

Options: S1 (POS), S3 (STR)

Repost Video on S3 Resume [No]

Options: No, Yes

Suspend Time Out [Disabled]

Options: Disabled, 1 Min, 2 Min, 4 Min, 8 Min, 10 Min, 20 Min, 30 Min, 40 Min, 50 Min, 60 Min

Restore on AC Power Loss [Power Off]

Options: Power OFF, Power ON, Last State

Resume By USB Device [Disabled]

Enable/ Disable USB Device Wakeup From S3/S4

Options: Disabled, Enabled

Resume On PME# [Disabled]

Options: Disabled, Enabled

Resume On RTC Alarm [Disabled]

Options: Disabled, Enabled,

If the value is Enabled.

RTC Alarm Date (Days) [Every Day]	KeyIn “+”/”-“ to select
RTC Alarm Time [00:00:00]	Use [ENTER], [TAB] or [SHIFT+TAB] to select a field Use [+] or [-] to configure system time

■ Security Menu

Table 48 Security Menu

BIOS SETUP UTILITY						
Main	Advanced	Boot	Chipset	Power	**Security**	Exit
Security Setting					Install or Change the password.	
Supervisor Password :Not Installed						
User Password :Not Installed						
Change Supervisor Password					<> Select Screen ↑↓ Select Item +- Change Field Tab Select Field F1 General Help F10 Save and Exit ESC Exit	
Change User Password						
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Change Supervisor Password

Select this item to set or change the supervisor password. The Supervisor Password item on top of the screen displays the default Not Installed. After you have set a password, this item displays Installed.

Change User Password

Select this item to set or change the user password. The User Password item on top of the screen displays the default Not Installed. After you have set a password, this item displays Installed.

■ Exit Menu

Table 49 Exit Menu

BIOS SETUP UTILITY						
Main	Advanced	Boot	Chipset	Power	Security	**Exit**
Exit Setting **Save Changes and Exit** Discard Changes and Exit Discard Changes Load Optimal Defaults Load Failsafe Defaults					Exit System Setup after saving the changes. F10 key can be used for this operation. <> Select Screen ↑↓ Select Item +- Change Field Tab Select Field F1 General Help F10 Save and Exit ESC Exit	
V02.61 (C)Copyright 1985-2006, American Megatrends, Inc.						

Save Changes and Exit

Exit system setup after saving the changes. Once you are finished making your selections, choose this option from the Exit menu to ensure the values you selected are saved to the CMOS RAM. The CMOS RAM is sustained by an onboard backup battery and stays on even when the PC is turned off. When you select this option, a confirmation window appears. Select [Yes] to save changes and exit.

Discard Changes and Exit

Exit system setup without saving any changes. Select this option only if you do not want to save the changes that you made to the Setup program. If you made changes to fields other than system date, system time, and password, the BIOS asks for a confirmation before exiting.

Discard Changes

Discards changes done so far to any of the setup values. This option allows you to discard the selections you made and restore the previously saved values. After selecting this option, a confirmation appears. Select [Yes] to discard any changes and load the previously saved values.

Load Optimal Defaults

Load Optimal Default values for all the setup values. This option allows you to load optimal default values for each of the parameters on the Setup menus, which will provide the best performance settings for your system. The F9 key can be used for this operation.

Load Failsafe Defaults

Load Optimal Default values for all the setup values. This option allows you to load failsafe default values for each of the parameters on the Setup menus, which will provide the most stable performance settings. The F8 key can be used for this operation.

Chapter 5

Driver Installation

If your KEMX-2130 does not come with an operating system pre-installed, you will need to install an operating system and the necessary drivers to operate it. After you have finished assembling your system and connected the appropriate power source, power it up using the power supply and install the desired operating system.
You can download the drivers for the KEMX-2130 from the Quanmax website at www.quanmax.com and install as instructed there. For other operating systems, please contact Quanmax.

Appendix A

DIO (Digital I/O) Sample Code

```
//=============================================
//KEMX-2130 DOS DIO sample program
//Please compile with Turbo C 3.0 to utilized the program
//=============================================
Int main(){
        //Output RetVal to Digital Output
        //Set all output to 1
        outp(0x48d, 0xF0);//DO0 is bit 4
                          //DO1 is bit 5
                               //DO2 is bit 6
                               //DO3 is bit 7

        //Set all output to 0
        outp(0x48d, 0x00);

        //Reading Digital input
        RetVal=inp(0x48c);//DI0 is bit 6
                                 //DI1 is bit 7
        RetVal=inp(0x4B8);//DI2 is bit 6
        RetVal=inp(0x48d);//DI3 is bit 1
        Return 0;
}
```

Appendix B

WatchDog Timer Sample Code

```
//===============================================
//KEMX-2130 DOS Watchdog sample program
//Please compile with Turbo C 3.0 to utilized the program
//===============================================

int main()
{
//Initialized the WDT program
 outp(0x2e,0x87);
 outp(0x2e,0x01);
 outp(0x2e,0x55);
 outp(0x2e,0x55);

//Setting Logical Device Number to 0x07
 outp(0x2e,0x07);
 outp(0x2f,0x07);

 outp(0x2e,0xf1);
 outp(0x2f,0x44);

 outp(0x2e,0xf4);
 outp(0x2f,0xea);

//Set Timer Value(0x73 is LSB while 0x74 is MSB)
 outp(0x2e,0x73);
 outp(0x2f,0x14);//set to 20 sec (0x14)

//Set Timer Unit to Second/Minute(Bit 7 equal to 1 is second/0 is minute)
 outp(0x2e,0x72);
 outp(0x2f,0x80);//The unit is set as second
 return 0;
}
```